EXAMINER'S AMENDMENT

- An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

- Authorization for this examiner's amendment was given in a telephone interview with applicant's representative, FREDERICK E. COOPERRIDER, on 12/18/2009.

AMENDMENT TO THE CLAIMS

The listing of claims as below replaces listing in the CLAIMS that was filed by applicant on 09/21/2009.

1. (Currently amended) A method for storing information for one or more semantic objects derived from raw seismic data, the method comprising:

receiving, from a memory, a semantic object extracted from said raw seismic data and classified to comprise said semantic object, said received semantic object having one or more attributes;

generating, using a processor on a computer:

a summary of attributes of said received semantic object by calculating one or more statistics of one or more of said one or more attributes of said received semantic object;

a confidence level of said received semantic object that quantifies a degree of certainty that said received semantic object has been correctly classified and/or labeled; and

a compact representation of raw seismic data of said received semantic object, said compact representation comprising a multiple segment polyline;

generating indexing information for one or more of the summary of attributes and the compact representation of said received semantic object, wherein the generated indexing information for the compact representation of said received semantic object includes indexing information of end points and slopes of the multiple segment polyline; and

storing the received semantic object along with its associated summary of attributes, confidence level, compact representation, and indexing information in a semantic object database associated with a database storing said raw seismic data.

2. (Canceled)

3. (Previously presented) The method of claim 1, wherein the summary of attributes, confidence level, and/or compact representation is generated and stored in said semantic object database for each of a plurality of said semantic objects and said semantic object database can be searched.

4. (Currently amended) The method of claim 3, wherein a query used to search said semantic object database will identify any of a semantic object having attributes that match one or more terms of said query and the identified semantic object can selectively be retrieved, including selectively retrieving at least one of:

any information in said semantic object database associated with said identified semantic object; and

any of the raw seismic data associated with said identified semantic object.

5. (Previously presented) The method of claim 3, wherein an optimizing mechanism is used in searching to optimize a process of searching.

6. (Original) The method of claim 1, wherein the semantic object represents a model of a phenomena of interest that is measured by a collection of data which exceeds a data size that is accessible with a predetermined efficiency by multiple simultaneous users.

7-10. (Canceled)

11. (Previously presented) The method of claim 1, wherein each segment of the multiple segment polyline comprises a best fit line having end point coordinates and a slope.

12. (Canceled)

13. (Original) A method of deploying computer infrastructure, comprising integrating computer-readable code into a computing system, wherein the code in combination with the computing system is capable of performing the method of claim 1.

14. (Currently amended) A storage medium having tangibly embedded therein a program of computer readable instructions executable by a digital processor, the program comprising:

instructions for receiving a semantic object extracted from raw seismic data and classified to comprise said semantic object, said received semantic object having one or more attributes;

instructions for generating:

a summary of attributes of said received semantic object by calculating one or more statistics of one or more of said one or more attributes of said received semantic object;

a confidence level of said received semantic object that quantifies a degree of certainty that said received semantic object has been correctly classified and/or labeled; and

a compact representation of raw seismic data of said received semantic object, said compact representation comprises a multiple segment polyline;

instructions for generating indexing information for at least one of the summary of attributes and the compact representation of said received semantic object, wherein the generated indexing information for the compact representation of said received semantic object includes indexing information of end points and slopes of the multiple segment polyline; and

instructions for storing the received semantic object along with its associated summary of attributes, confidence level, compact representation, and indexing information in a semantic object database associated with a database storing said raw seismic data.

15. (Canceled)

16. (Previously presented) The storage medium of claim 14, wherein a summary of attributes, confidence level, and/or compact representation can be generated and stored in said semantic object database for each of a plurality of said semantic objects and said semantic object database can be searched, further comprising instructions for searching said semantic object database.

17. (Currently amended) The storage medium of claim 16, wherein a query used to search said semantic object database will identify any of a semantic object having attributes that match one or more terms of a

query, said program further comprising instructions for selectively retrieving the identified semantic object, including the capability to selectively retrieve at least one of:

any information in said semantic object database associated with said identified semantic object; and

any of the raw seismic data associated with said identified semantic object.

18. (Previously presented) The storage medium of claim 16, wherein an optimizing mechanism is used in searching to optimize a process of searching.

19. (Previously presented) The storage medium of claim 14, wherein the semantic object represents a model of a phenomena of interest that is measured by a collection of data which exceeds a data size that is accessible with a predetermined efficiency by multiple simultaneous users.

20-23. (Canceled)

24. (Previously presented) The storage medium of claim 14, wherein each segment of the multiple segment polyline comprises a best fit line having end point coordinates and a slope.

25. (Canceled)

26. (Currently amended) A system for storing a semantic object, the system comprising:

a semantic object summarizer, executed by a computer, that receives a previously-defined semantic object extracted from raw seismic data and classified to comprise said previously-defined semantic object, said received previously-defined semantic object having one or more attributes, and generates:

a summary of attributes of said previously-defined semantic object by calculating one or more statistics of one or more of said one or more attributes of said received previously-defined semantic object;

a confidence level of said received semantic object that quantifies a degree of certainty that said received previously-defined semantic object has been correctly classified and/or labeled; and

a compact representation of raw seismic data of said received previously-defined semantic object, said compact representation comprising a multiple segment polyline;

an indexer, executed by said computer, that generates indexing information for the summary of attributes and the compact representation of said semantic object, wherein the generated indexing information for the compact representation of said received semantic object includes indexing information of end points and slopes of the multiple segment polyline; and

a database that stores said received previously-defined semantic object along with its associated summary of attributes, confidence level, compact representation, and indexing information as a semantic object database associated with a database storing said raw seismic data.

27. (Canceled)

28. (Previously presented) The system of claim 26, wherein the summary of attributes, confidence level, and/or compact representation can be generated and stored in said semantic object database for each of a plurality of said semantic objects and said semantic object database can be searched, said system further comprising a searching device that permits a user to search the semantic object database.

29. (Currently amended) The system of claim 26, wherein a query used to search said semantic object database will identify any of a semantic object having attributes that match one or more terms of said query and the identified semantic object can selectively be retrieved, including selectively retrieving at least one of:

any information in said semantic object database associated with said identified semantic object; and

any of the raw seismic data associated with said identified semantic object.

30. (Previously presented) The system of claim 28, wherein said searching device comprises an optimizing mechanism that optimizes a process of searching.

31. (Original) The system of claim 26, wherein the semantic object represents a model of a phenomena of interest that is measured by a collection of data which exceeds a data size that is accessible with a predetermined efficiency by multiple simultaneous users.

32-35. (Canceled).

36. (Previously presented) The system of claim 26, wherein each segment of the multiple segment polyline comprises a best fit line having end point coordinates and a slope.

37. (Canceled)

38. (Previously presented) The method according to claim 1, wherein the raw seismic data comprises geological seismic survey data and said received semantic object has been previously extracted from said geological seismic survey data and comprises one or more of:

a fault;

a horizon;

a channel; and

one or more subcomponent of any of the above semantic objects.

39. (Previously presented) The method according to claim 11, wherein an R-tree spatial index structure is used to facilitate a retrieval of a structure that approximates a polyline.

40. (Previously presented) The method according to claim 11, wherein each said segment of said multiple segment polyline is searchable using one or more terms of a sub-query of a query.

41. (Currently amended) The method of claim 1, wherein said statistics of said received semantic object comprising said summary of attributes comprise one or more of:

a number of points in said received semantic object;

an average value of each attribute within said received semantic object;

a variance of data within said semantic object; and a range of values for data within said received semantic object.

42. (Currently amended) The method of claim 1, wherein said summary of attributes and said confidence level of said received semantic object are stored in a first table and said compact representation of said semantic object is stored in a second table linked to said first table.

43. (Previously presented) The method of claim 4, wherein:

a query is decomposed into sub-query components that are translated into constraints on compact representations or summary statistics,

results from multiple constraints on a single feature are fused together into a fused result for a class of that feature, and

said fused result creates a new semantic object of a compound feature class.

REASONS FOR ALLOWANCE

- The following is an examiner's statement of reasons for allowance:

Prior arts of record do not render obvious, nor anticipate the combination of claimed elements including the technique of ***generating indexing information for one or more of the summary of attributes and the compact representation of said received semantic object, wherein the generated indexing information for the compact representation of said received semantic object includes indexing information of end points and slopes of the multiple segment polyline*** as recited in claims 1, 14 and 26. Thus, claims 1, 14 and 26 are allowed. Dependent claims 3-6, 11, 13, 16-19, 24, 28-31, 36 and 38-43 are allowed at least by virtue of their dependencies from claims 1, 14 and 26.

- Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

CONTACT INFORMATION

- Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG Q. PHAM whose telephone number is 571-272-4040. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JAMES K. TRUJILLO can be reached on 571-272-3677. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HUNG Q. PHAM/
Primary Examiner, Art Unit 2159

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HUNG Q. PHAM
Primary Examiner
Art Unit 2159